

South Fork Kings GSA
GSA Board Technical Workshop
January 17, 2019

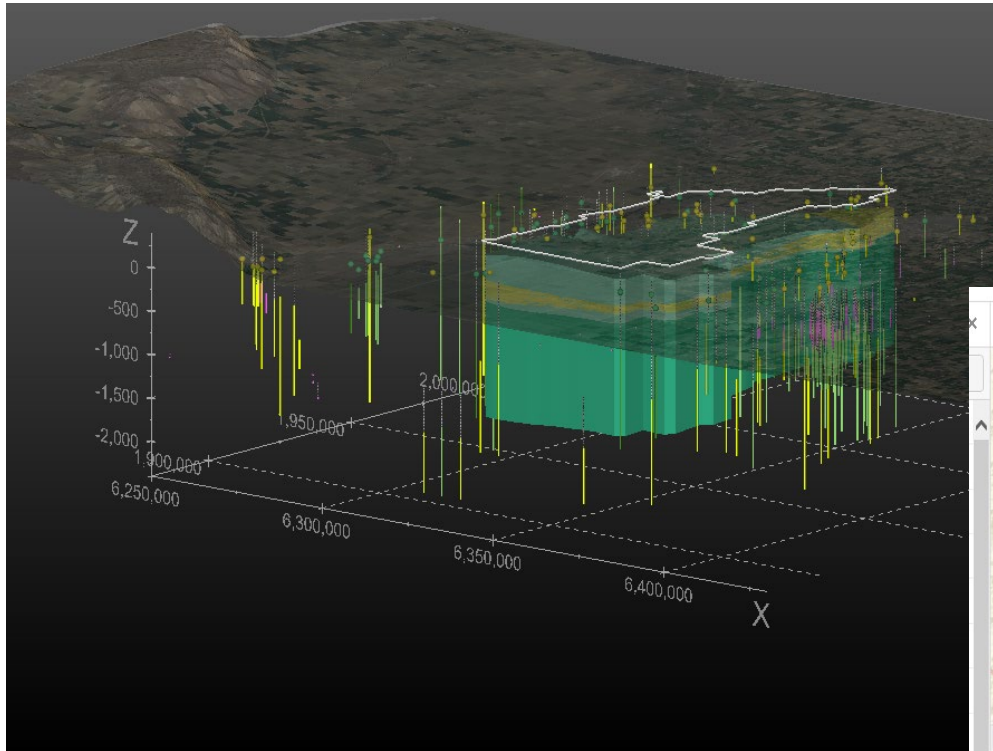
Geosyntec[®]
consultants



1. General Update
2. Recap of October Meeting
3. Management Actions
4. GSA Role/Responsibility Discussion

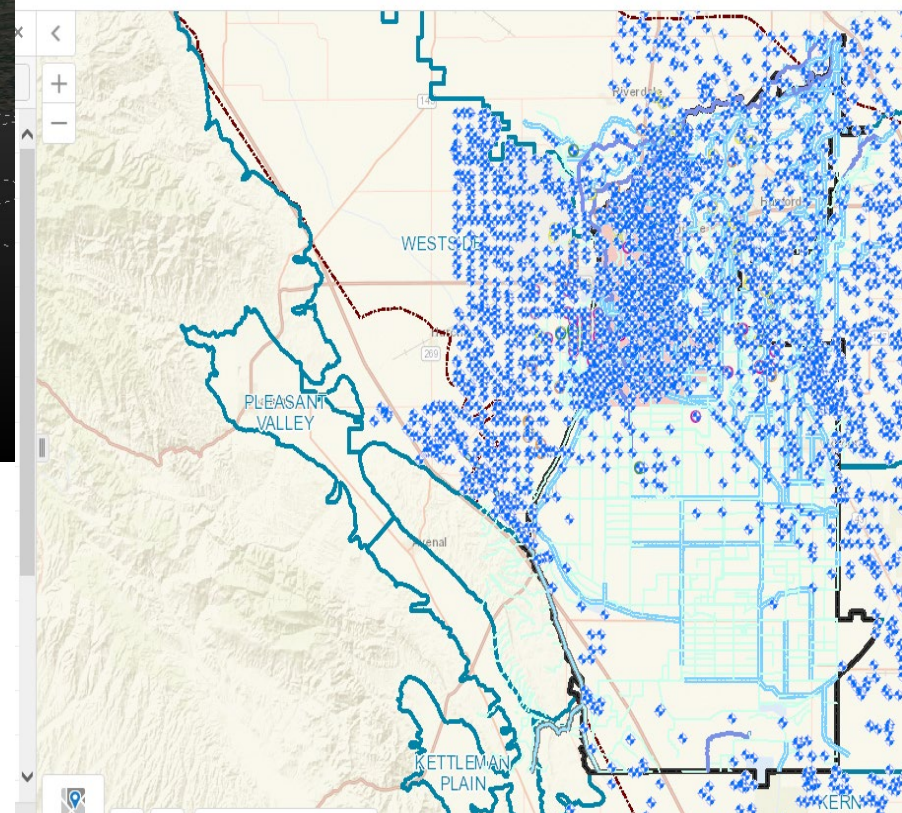
- Basin Setting
- Sustainable Management Criteria
- Monitoring Networks
- Management Actions

SFKGSA Visualization Model & GIS

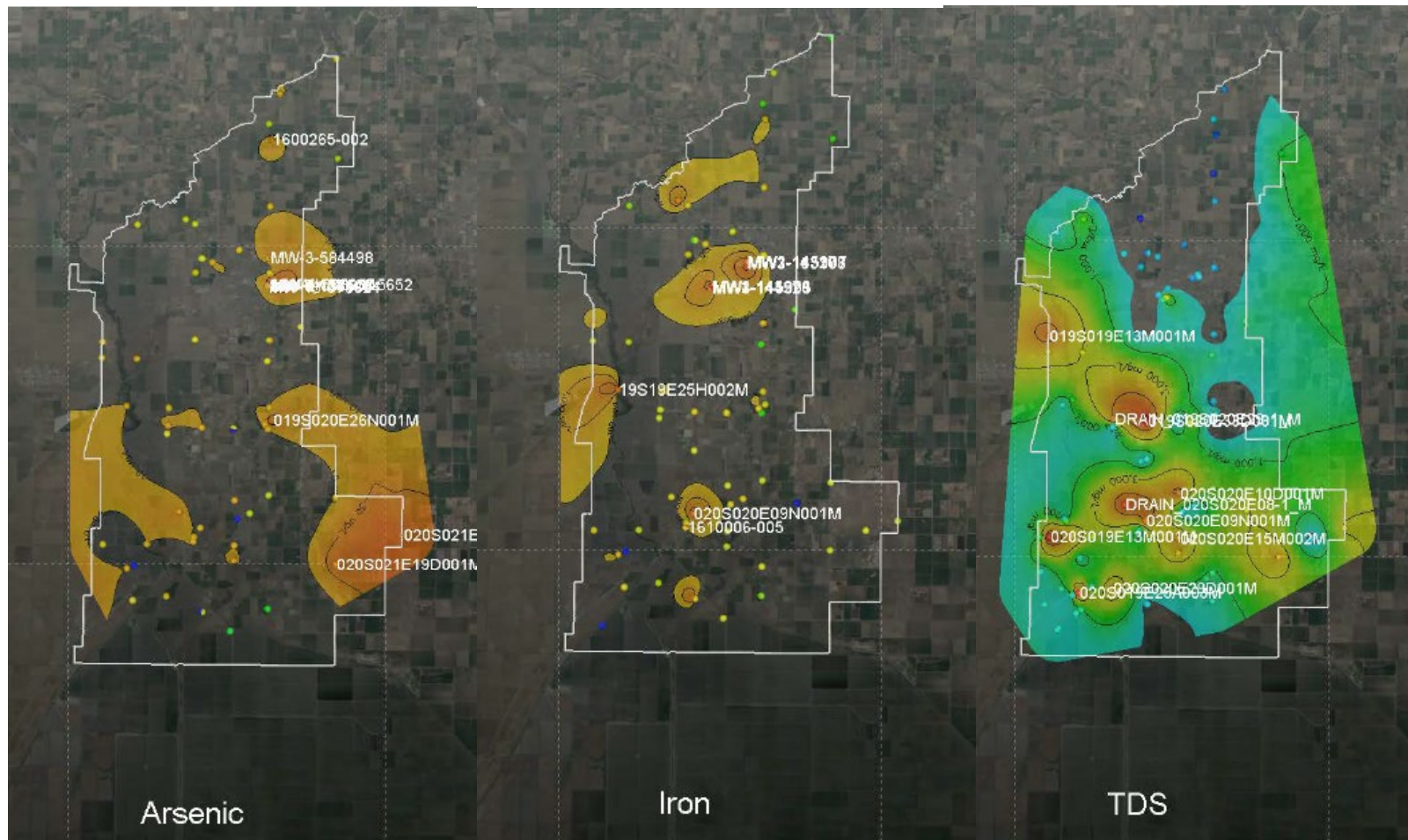


Visualization

GIS (Web-enabled)

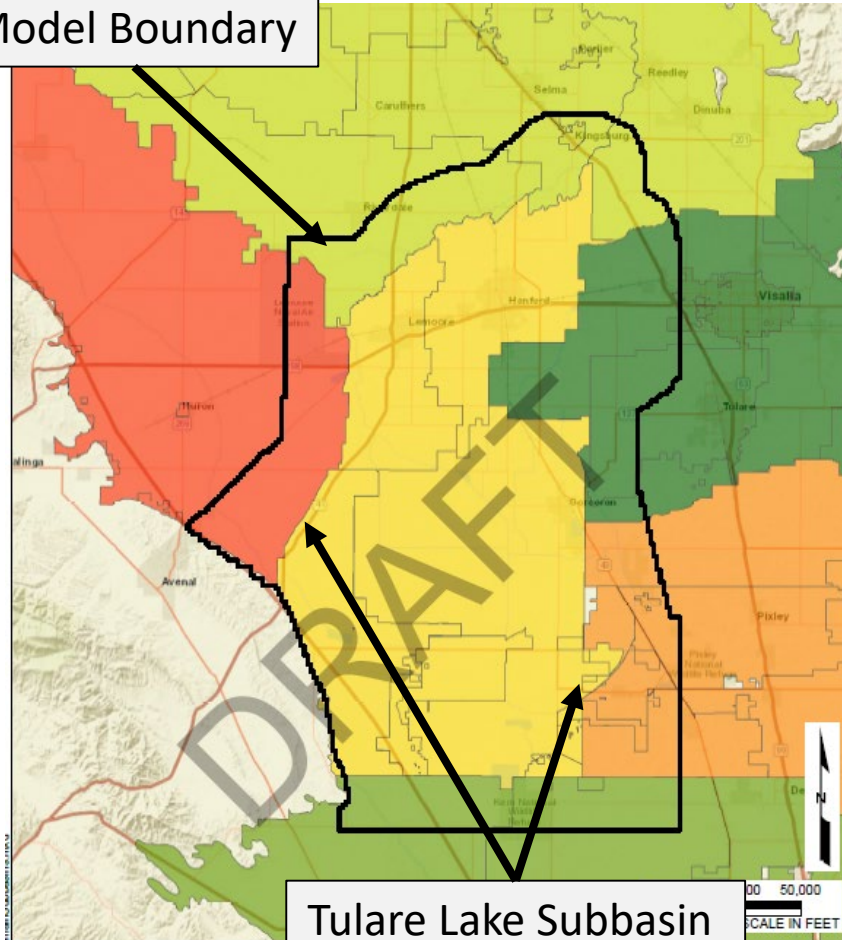


SFK Groundwater Quality



Tulare Lake Subbasin (TLSB) Local Model

Model Boundary



Tulare Lake Subbasin
Boundaries



TULARE LAKE GROUNDWATER SUBBASIN HYDROLOGIC MODEL FOR SGMA COMPLIANCE: PRELIMINARY MODEL DEVELOPMENT, CALIBRATION, AND PREDICTIVE SIMULATIONS

Tulare Lake Subbasin Hydrologic Model
Kings County, California

Prepared for:

Kings County Community Development Agency
1400 West Lacy Boulevard
Hanford, California 93230

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
1281 East Alluvial Avenue, Suite 101
Fresno, California 93720
(559) 264-2535

July 9, 2018

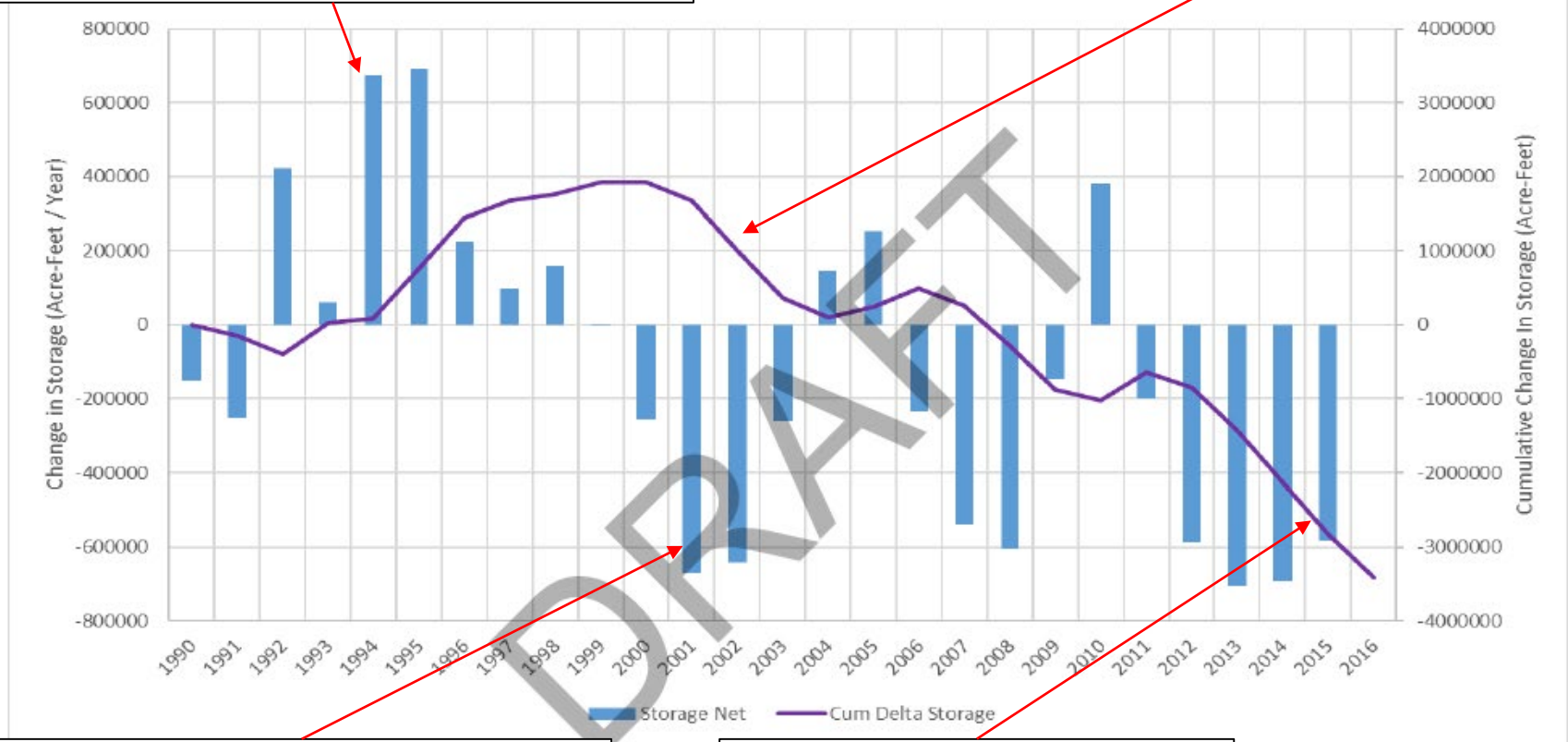
Project FR16161020

Modeled Storage Change within TLSB

+ Storage increase from previous year

+ cumulative increase from 1990

Tulare Lake

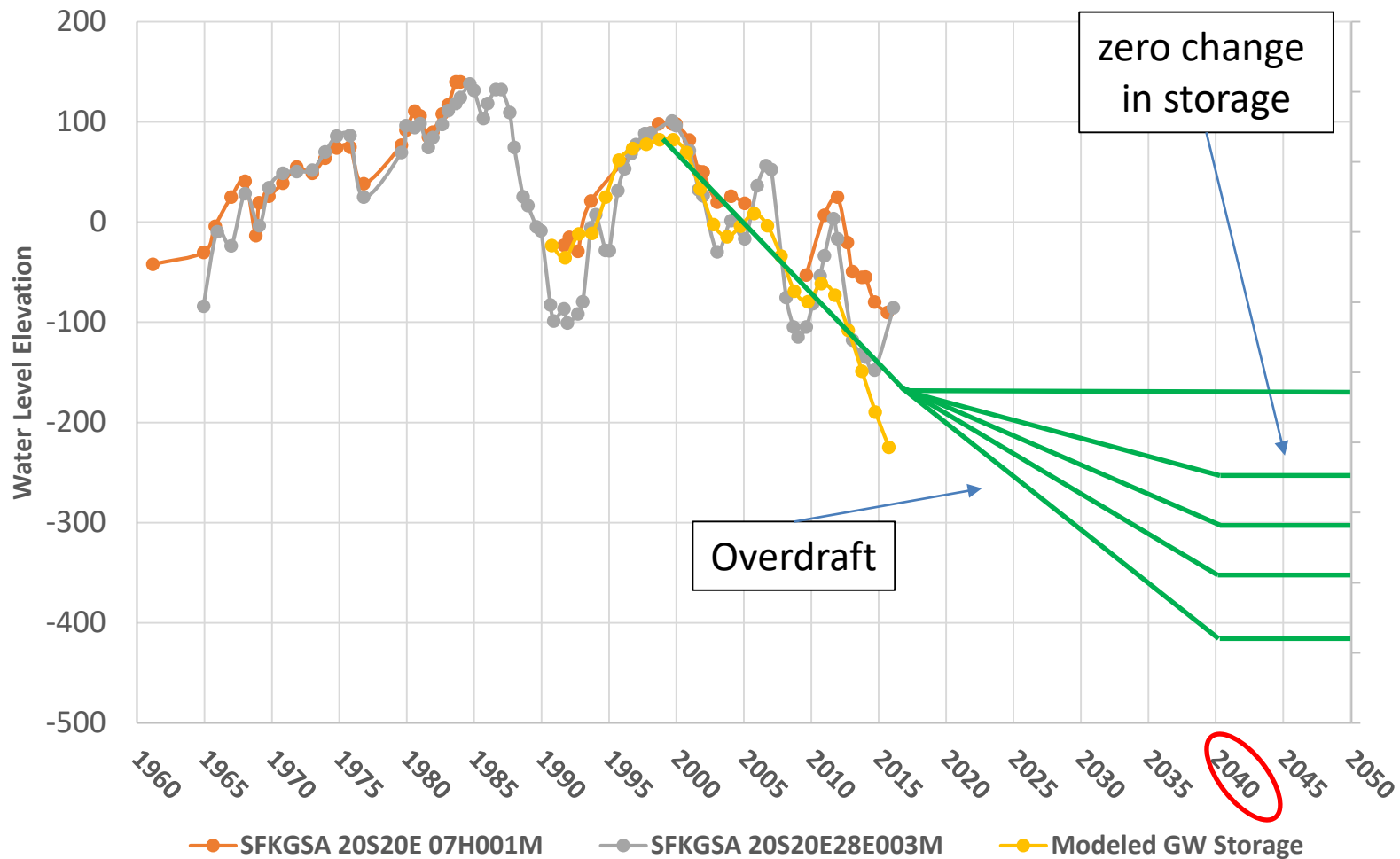


-Storage loss from previous year

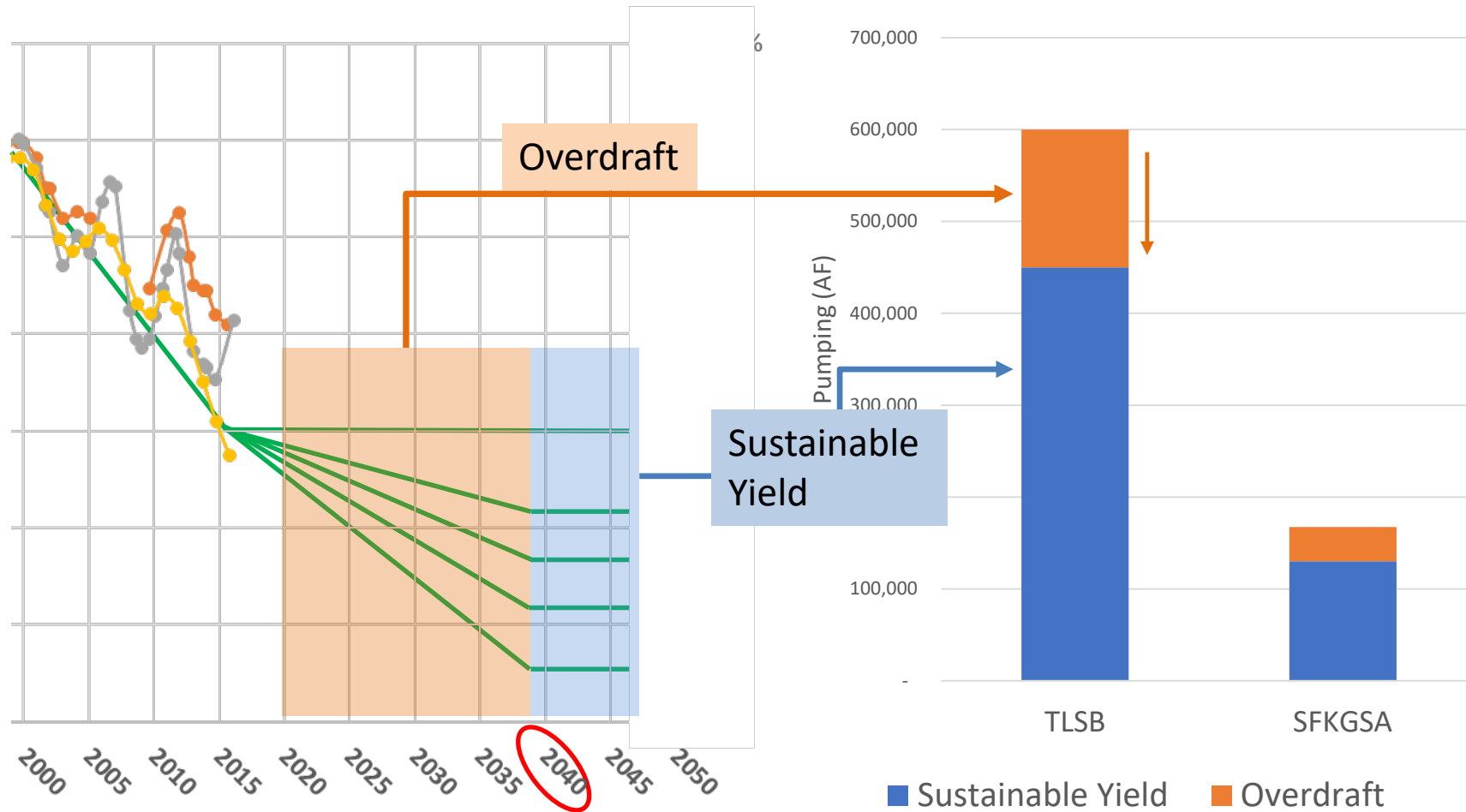
cumulative loss from 1990

Long-Term Net Decline in Groundwater Storage within the TLSB

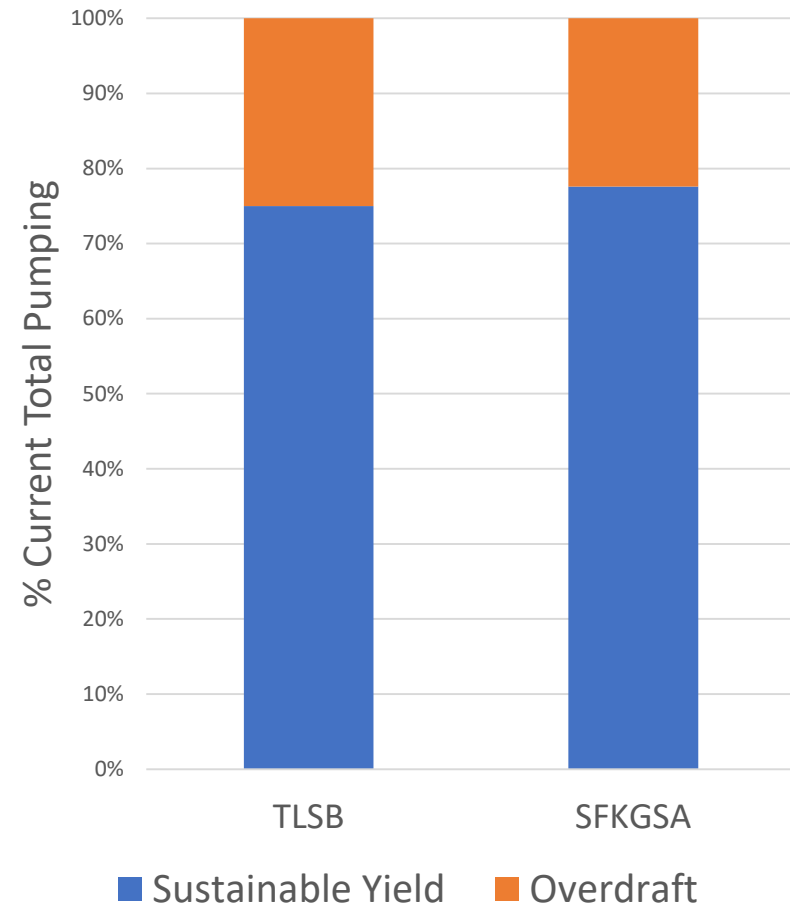
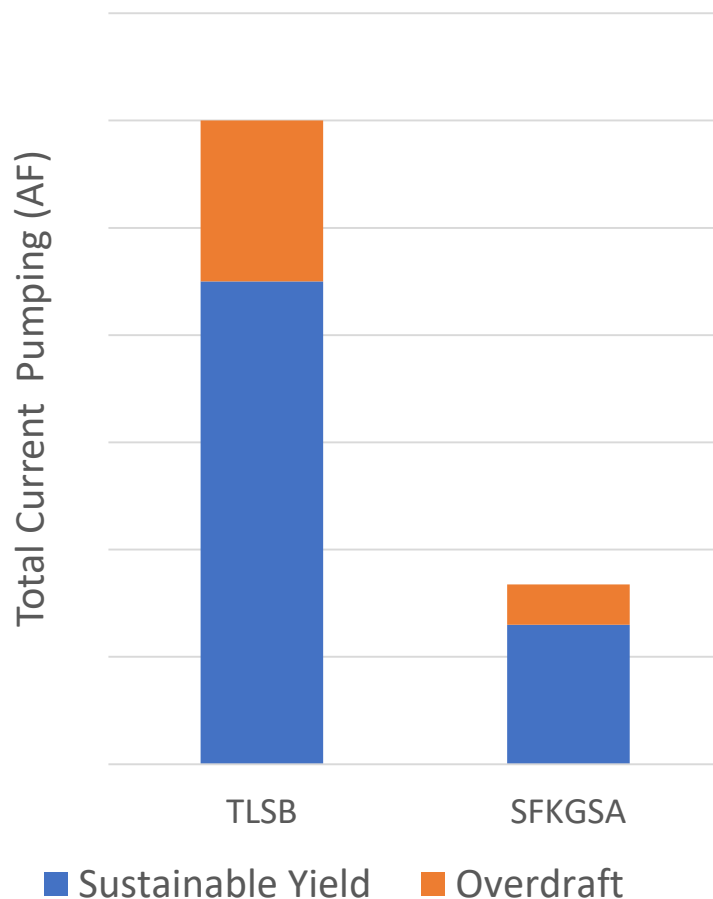
Projecting Sustainability to 2040



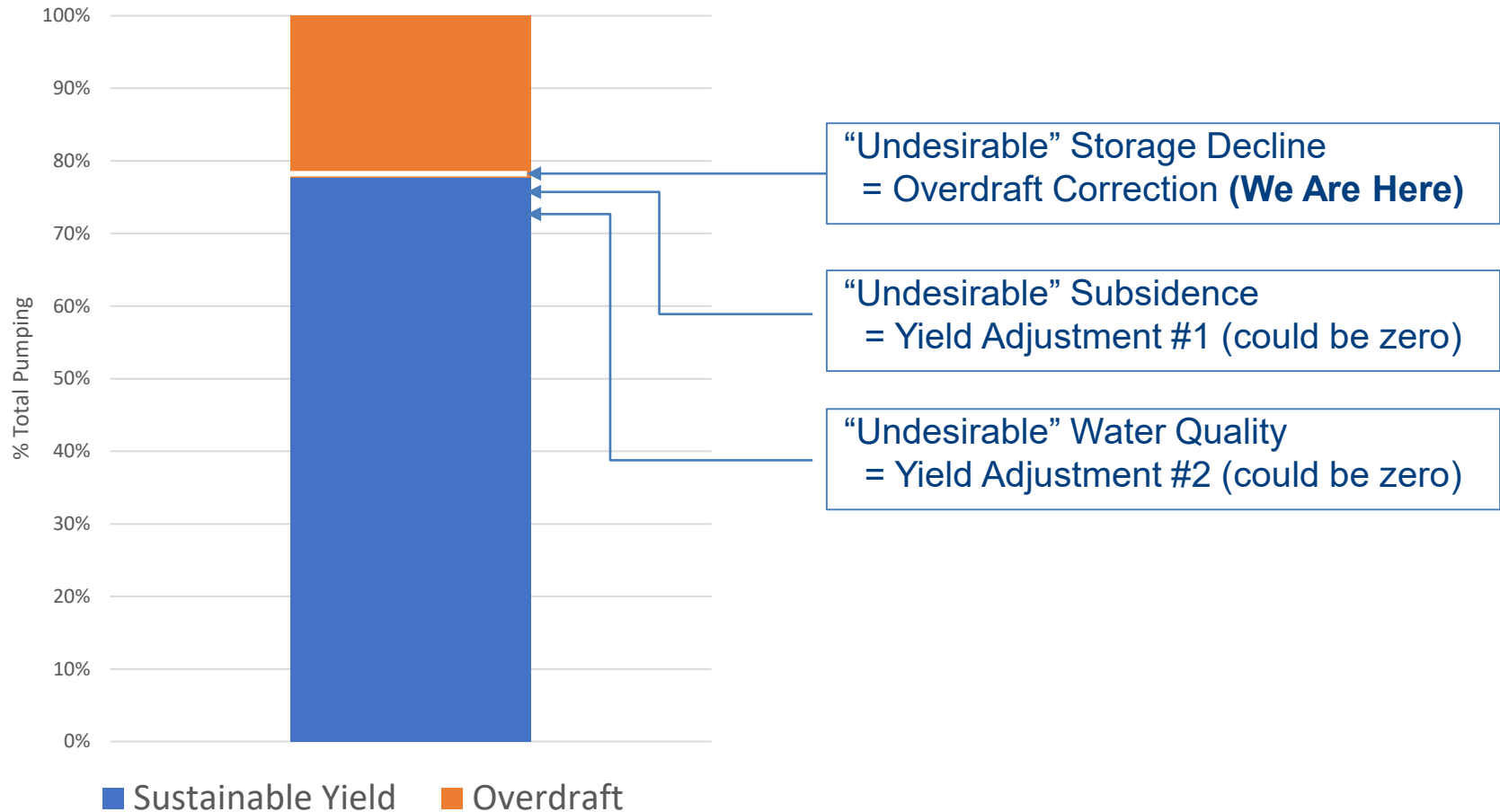
Projecting Sustainability to 2040



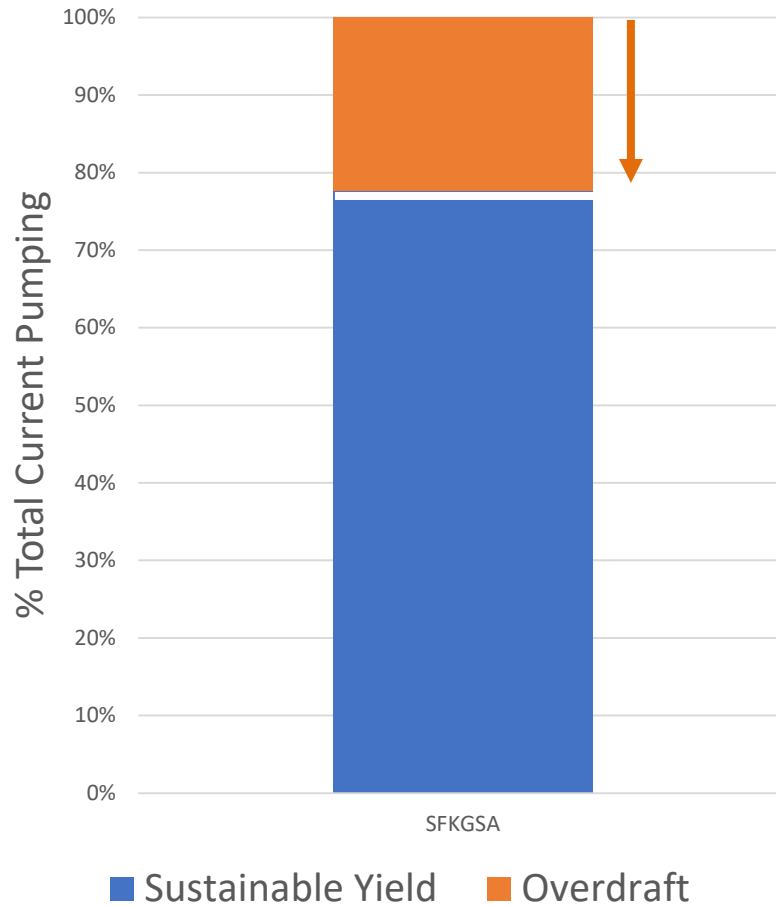
Thinking in % of Total.....



Defining Sustainable Yield

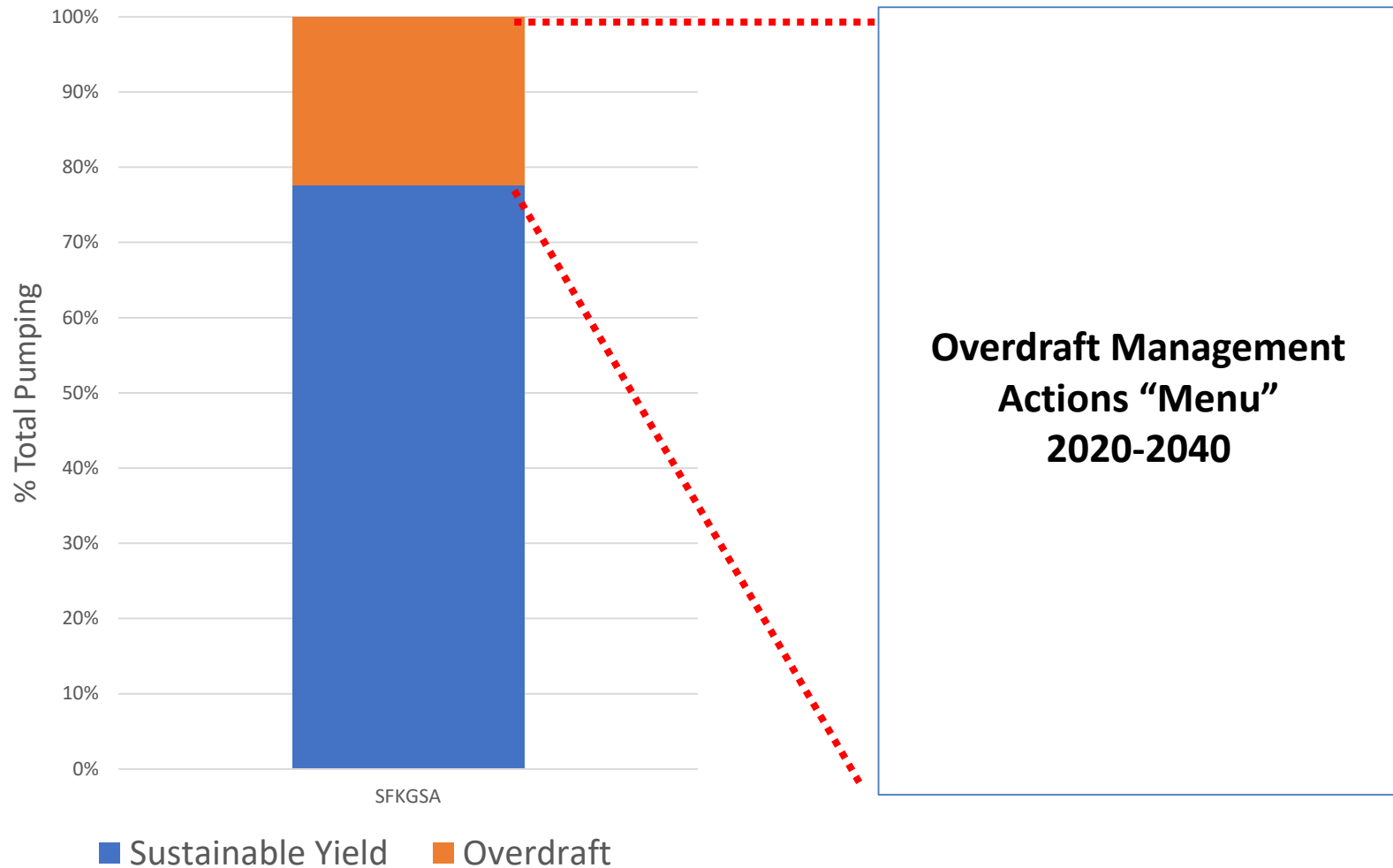


3 Steps to Sustainability



1. Correct overdraft (2040)
2. Maintain Sustainability
3. Adaptive Management

Overdraft Reduction Allocation/Targets





Article 5: Plan Contents

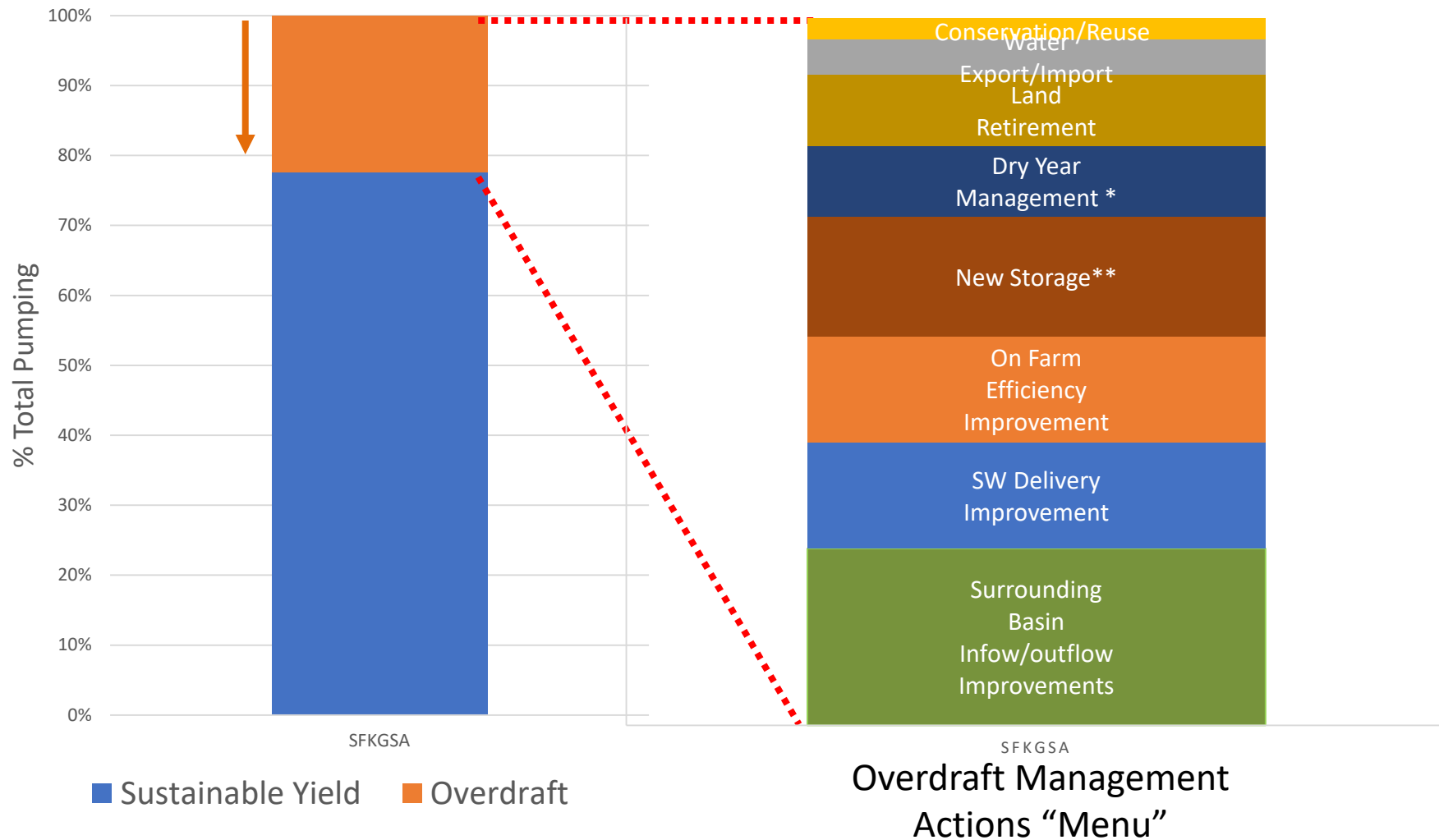


SUBARTICLE 5: PROJECTS AND MANAGEMENT ACTIONS

- Realistic and sufficient projects and actions to achieve sustainability.
- Developed to a level that demonstrates GSAs have the resources, knowledge, and stakeholder acceptance to implement them.
- Known timeframe and general cost.
- Projects do not need to be designed.
- Supplemental plans and actions to address future uncertainties.
- All projects and management actions do NOT have to be implemented just because they are listed in the GSP.



Overdraft Reduction Allocation/Targets

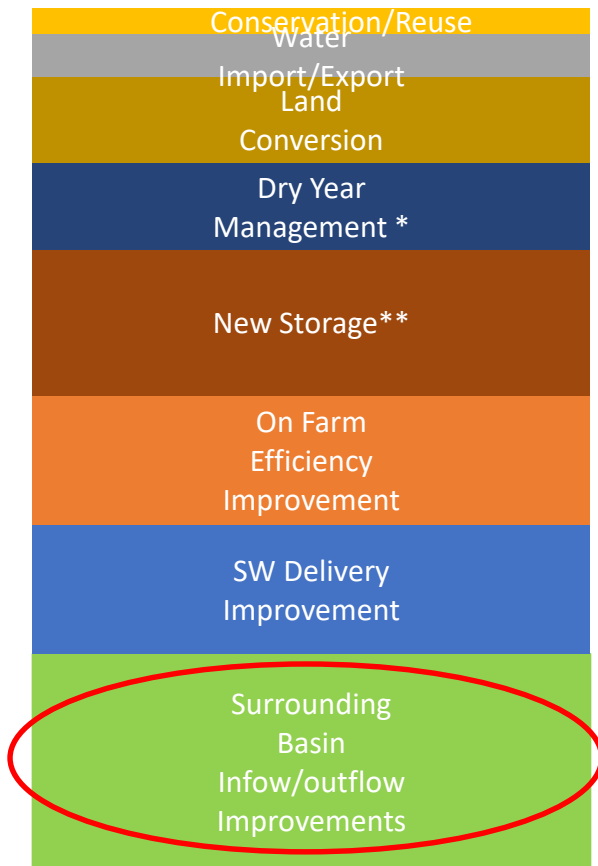




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Role of GSA/Board

- Overall Approach (GSA)
 - Control versus influence
 - Carrot versus stick
- Monitoring
 - Verifying each contribution to overdraft correction
 - Tools for adaptive management



SFGSA

Boundary Inflow/Outflow Improvements

- Westside
- North Fork Kings
- El Rico
- Kaweah/Tule
- Mid-Kings
- *“A rising tide floats all boats”*

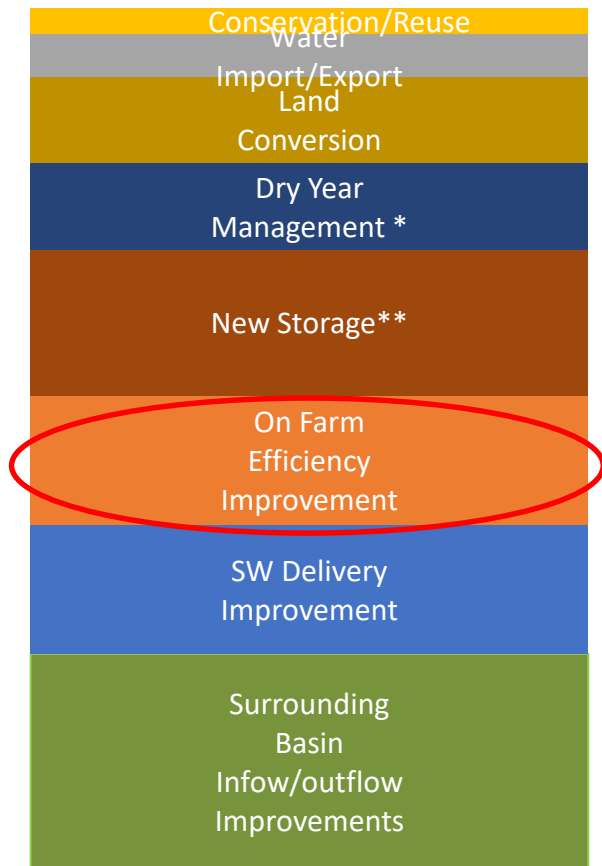


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SW Delivery Improvement

- Main Canal Lining
- Secondary Canal Lining
- Scheduling Improvements

SW Delivery efficiency = less pumping
Minimize impacts to shallow wells



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On-Farm Efficiency Improvement

- BMPs
- System Pressurization
- Drip Conversion
- Sprinkler conversion

Reduced total demand = less pumping



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New Storage

- Better use of existing storage
- Wet Year Fill
- Surface Water
- Groundwater (aka Recharge)

In order to reduce overdraft, storage volume must be proportional to frequency of wet year conditions and ability to carry-over

Increased volume used in-lieu of pumping = pumping reduction



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Dry Year Management

- Fallowing – Seasonal crop
- Trading – Seasonal --> Permanent

In order to reduce overdraft, acreage in fallowing or trading program must be proportional to frequency of dry year conditions

Reduced demand = less pumping



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Land Conversion

- Permanent retirement (e.g. solar)
- Urban/Rural Conversion
- Short/long term crop conversion

Reduced demand = less pumping



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Water Import/Export

- Import more or export less
- Permanent
- Temporary

Reduces pumping

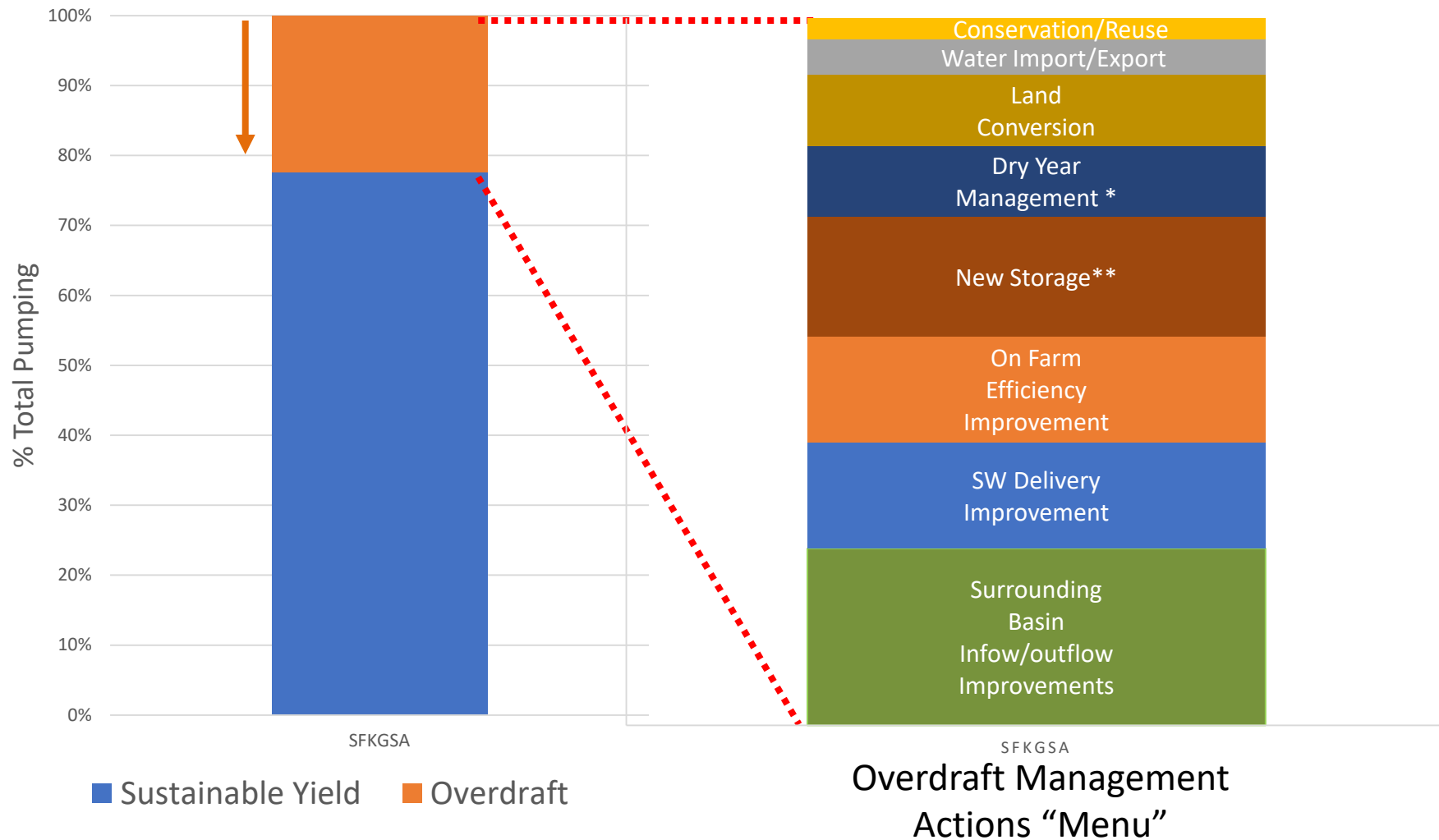


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Conservation/Reuse

- Municipal
- Recreational (e.g. golf course)
- Public outreach
- ASR/Indirect Potable Reuse (IPR)

Overdraft Reduction Allocation/Targets

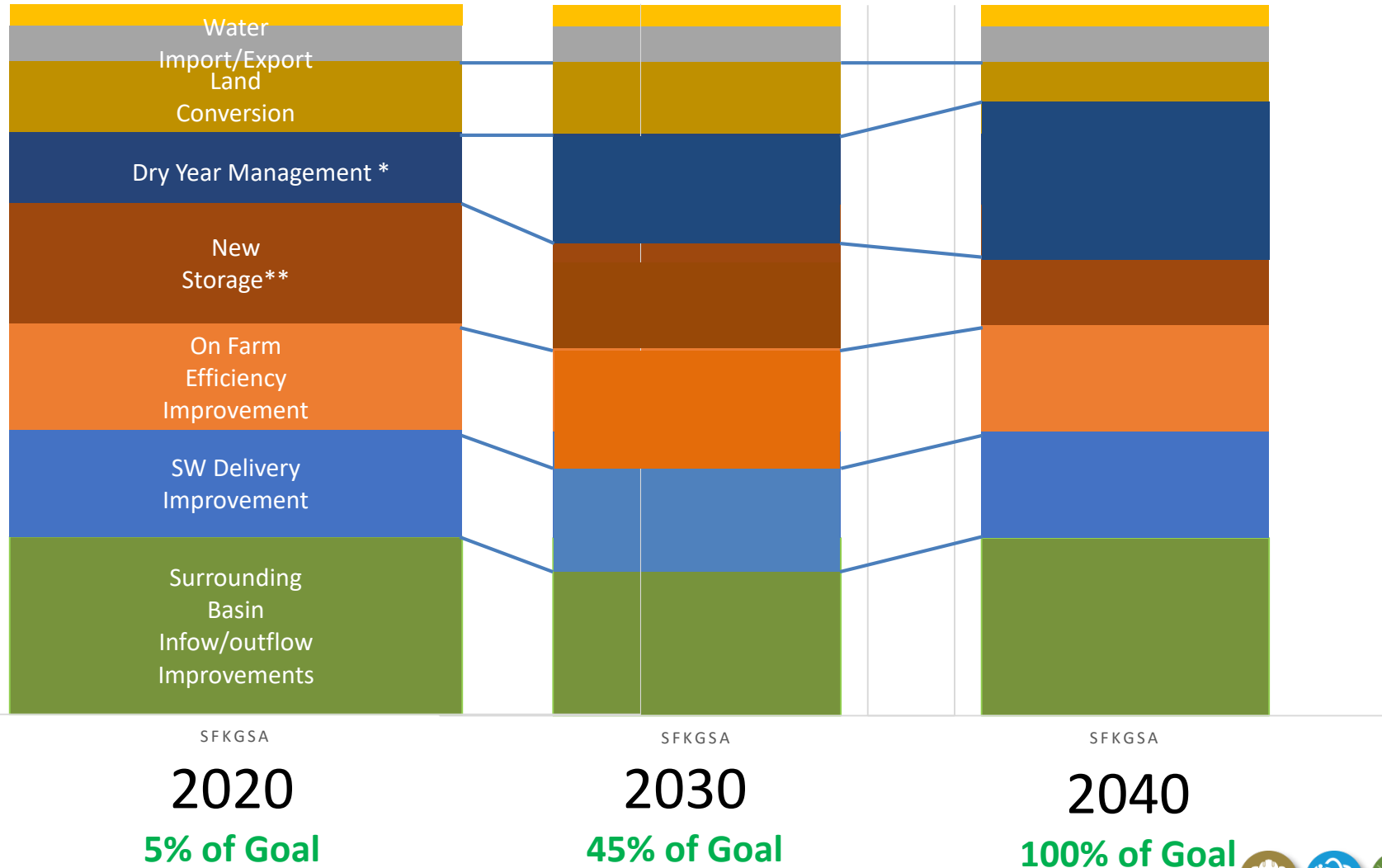




Overdraft Management
Actions “Menu”

- 1-year/5-year/10-year reviews
- Data Component
 - GW/SW Monitoring
 - Water use
 - Water quality
 - Subsidence
- “Program” Component
 - Financial/economic
 - Legal/regulatory
 - Social/Public

Adaptive Management – Mix of actions evolves





SFKGSA

- **2-Step Process**
 - Overdraft Correction
 - Sustainability Management
- **Overall Approach (GSA)**
 - Control versus influence
 - Carrot versus stick
- **Monitoring**
 - Verifying each contribution to overdraft correction
 - Tools for adaptive management

Thank You



Sustainable Yield Allocation

